

Office Action Summary

Application No.

10/037,755

Applicant(s)

CHO ET AL.

Examiner

KHAI TRAN

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2611

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4 and 10-13 is/are allowed.
- 6) ☒ Claim(s) 5-9 and 14-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
- Paper No(s)/Mail Date _____
- 4) ☒ Interview Summary (PTO-413)
- Paper No(s)/Mail Date: 7/21/2008
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The amendment filed 3/14/2008 has been entered. Claims 1-18 are pending in this Office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 5, 6, 7, 8, 9, 14, 15, 16, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al (U.S. Pat. 6,163,563) in view of Okawa et al (U.S. Pat. 6,842,442).

Regarding claims 5, 14, Baker discloses a modulator for generating a modulated pilot symbol by outputting an input pilot channel data at a designated phase according to an information bit of the transmission data for determining the phase (col. 9, lines 37-42). Baker fails to disclose a spreader for spreading a modulated pilot symbol output from the modulator with a predefined orthogonal code.

Okawa et al discloses a spreading modulator (13) as shown in Figure 5 for spreading a modulated pilot symbol output from the modulator (a modulator 12) with a predefined orthogonal code (see col. 2, line 60 to col. 3, line 4, showing spreading the information symbols in each of the code channels using a spreading code properly assigned to the each of the code channels, the spreading code being selected from a group of orthogonal spreading codes that are orthogonal to each other and have a period equal to an information symbol period; and spreading the pilot symbols in the code channels using one of the spreading codes being selected from the group of the orthogonal spreading codes, or any of the spreading codes other than the spreading codes assigned to the information symbols in the code channels from the group of the orthogonal spreading codes; see col. 6, line 63 to col. 64, line 10 showing (the data are modulated by each modulator 12. The modulated data symbols of each code channel output from each modulator 12 are spread using a spreading code (SC-XXLC-Y) for the pilot symbols, and using spreading codes (SC-PXLC-Y, where P represents 1-N) for the information symbols of respective code channels); and see col. 11, lines 9-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the spreading modulator (13) for

spreading a modulated pilot symbol output with a predefined orthogonal code as taught by Okawa et al into the teachings of Baker's modulator in order to perform an accurate channel estimate using a pilot symbols.

Regarding claims 6, 15, Baker discloses a modulator for generating a modulated pilot symbol channel data at a designated complex channel according to an information bit of the transmission data for determining the complex channel (col. 9, lines 37-42). Baker fails to disclose a spreader for spreading a modulated pilot symbol output from the modulator with a predefined orthogonal code.

Okawa et al discloses a spreading modulator (13) as shown in Figure 5 for spreading a modulated pilot symbol output from the modulator (a modulator 12) with a predefined orthogonal code (see col. 2, line 60 to col. 3, line 4, showing spreading the information symbols in each of the code channels using a spreading code properly assigned to the each of the code channels, the spreading code being selected from a group of orthogonal spreading codes that are orthogonal to each other and have a period equal to an information symbol period; and spreading the pilot symbols in the code channels using one of the spreading codes being selected from the group of the orthogonal spreading codes, or any of the spreading codes other than the spreading codes assigned to the information symbols in the code channels from the group of the orthogonal spreading codes; see col. 6, line 63 to col. 64, line 10 showing (the data are modulated by each modulator 12. The modulated data symbols of each code channel output from each modulator 12 are spread using a spreading code (SC-XXLC-Y) for the pilot symbols, and using spreading codes (SC-PXLC-Y,

where P represents 1-N) for the information symbols of respective code channels); and see col. 11, lines 9-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the spreading modulator (13) for spreading a modulated pilot symbol output with a predefined orthogonal code as taught by Okawa et al into the teachings of Baker's modulator in order to perform an accurate channel estimate using a pilot symbols.

Regarding claims 9, 18, Baker discloses a modulator for generating a modulated pilot symbol by outputting an input pilot channel data on a designated complex channel according to an information bit of the transmission data for determining the complex channel (col. 9, lines 37-42). Baker fails to disclose a spreader for spreading a modulated pilot symbol output with a predefined orthogonal code selected according to the information bit, from a plurality of orthogonal codes.

Okawa et al discloses a spreading modulator (13) as shown in Figure 5 for spreading a modulated pilot symbol output from the modulator (a modulator 12) with a predefined orthogonal code (see col. 2, line 60 to col. 3, line 4, showing spreading the information symbols in each of the code channels using a spreading code properly assigned to the each of the code channels, the spreading code being selected from a group of orthogonal spreading codes that are orthogonal to each other and have a period equal to an information symbol period; and spreading the pilot symbols in the code channels using one of the spreading codes being selected from the group of the orthogonal spreading codes, or any of the spreading codes other than the spreading codes assigned to the information symbols in the code channels from the group of the

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orthogonal spreading codes; see col. 6, line 63 to col. 64, line 10 showing (the data are modulated by each modulator 12. The modulated data symbols of each code channel output from each modulator 12 are spread using a spreading code (SC-XXLC-Y) for the pilot symbols, and using spreading codes (SC-PXLC-Y, where P represents 1-N) for the information symbols of respective code channels); and see col. 11, lines 9-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the spreading modulator (13) for spreading a modulated pilot symbol output with a predefined orthogonal code as taught by Okawa et al into the teachings of Baker's modulator in order to perform an accurate channel estimate using a pilot symbols.

Claims 7, 16 are similar to claim 9. Therefore, claims 7, 16 are rejected under a similar rationale.

Claims 8, 17 are similar to claims 5, 9. Therefore, claims 8, 17 are rejected under a similar rationale.

Allowable Subject Matter

5. Claims 1-4, 10-13 are allowed.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KHAI TRAN/
Primary Examiner, Art Unit 2611

June 18, 2008